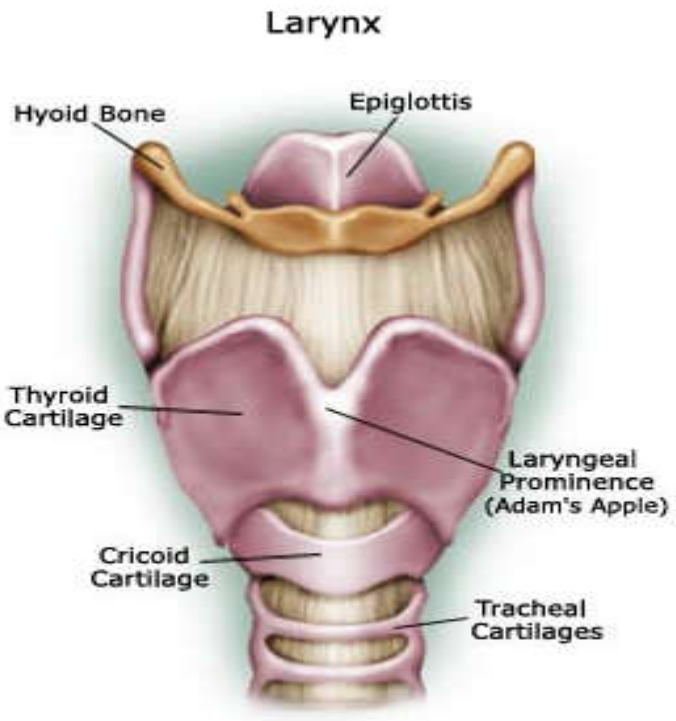
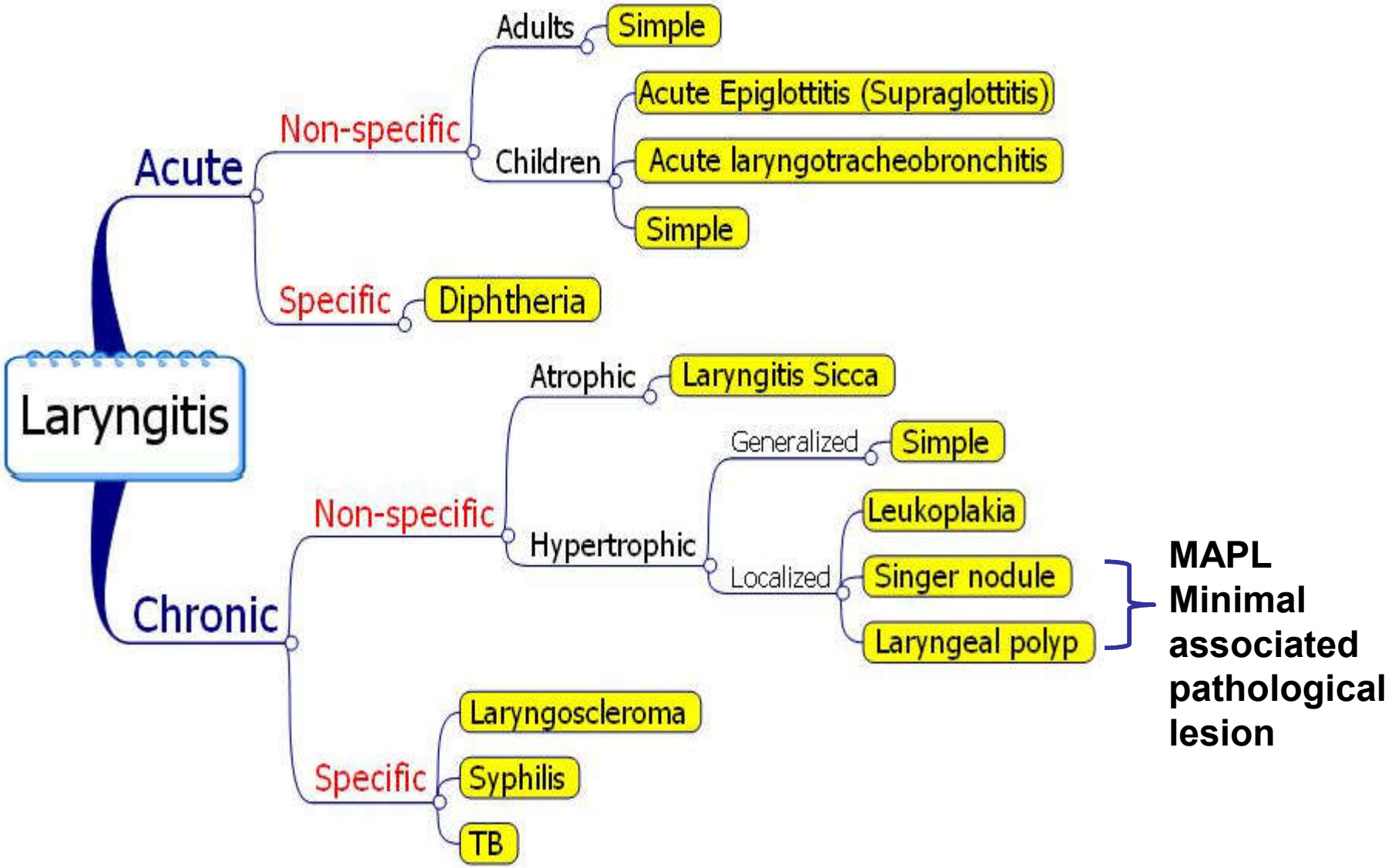
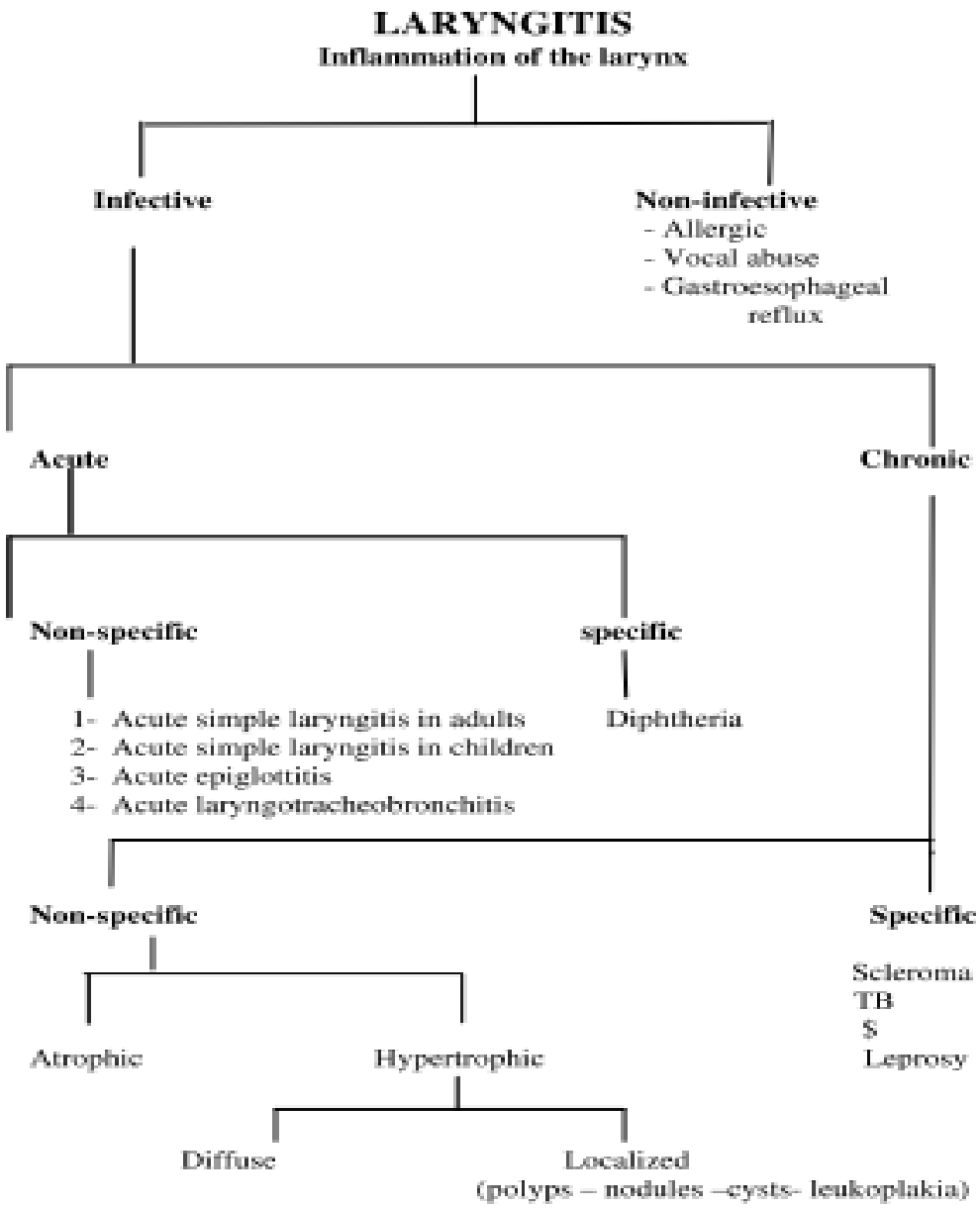
Infection of the Larynx For Undergraduate

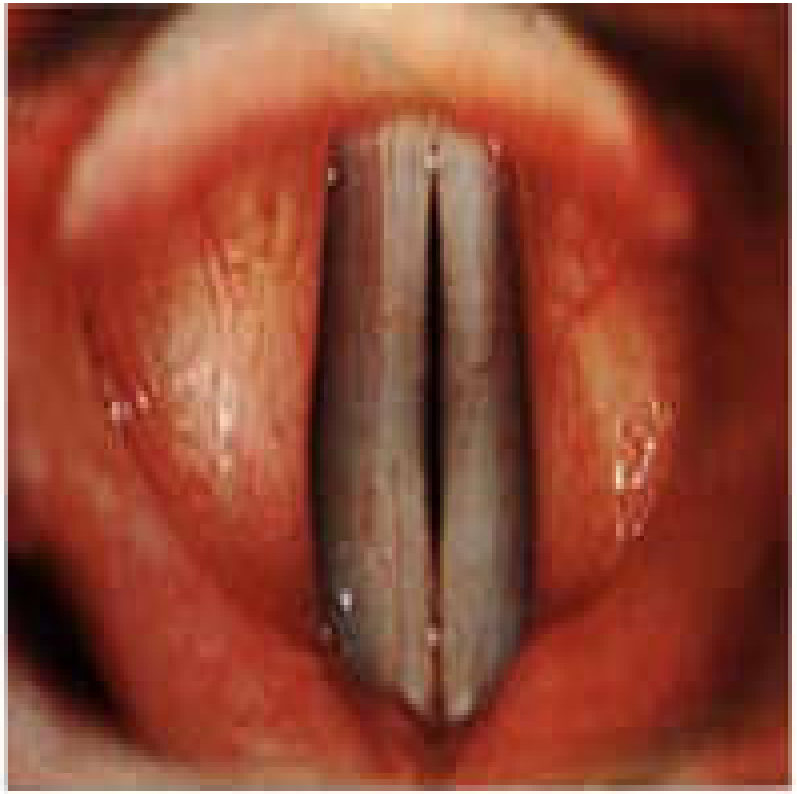



Laryngitis
Acute
Non-specific
Adults
Simple
Children
Acute Epiglottitis (Supraglottitis)
Acute laryngotracheobronchitis
Simple
Specific
Diphtheria
Chronic
Non-specific
Atrophic
Laryngitis Sicca
Hypertrophic
Generalized
Simple
Localized
Leukoplakia
Singer nodule
Laryngeal polyp
Specific
Laryngoscleroma
Syphilis
TB
MAPL
Minimal
associated
pathological
lesion


LARYNGITIS
Inflammation of the larynx
Infective
Non-infective
- Allergic
- Vocal abuse
- Gastroesophageal reflux
Acute
Chronic
Non-specific
specific
1- Acute simple laryngitis in adults
2- Acute simple laryngitis in children
3- Acute epiglottitis
4- Acute laryngotracheobronchitis
Diphtheria
Non-specific
Specific
Scleroma
TB
$
Leprosy
Atrophic
Hypertrophic
Diffuse
Localized
(polyps – nodules –cysts- leukoplakia)

Healthy Vocal Cords

- Smooth
- Straight edges
- White in color



Acute laryngitis in adults

Etiology :

- Usually part of URTI: common cold, Flu
- Organism: viral followed by 2ry bacterial infection
- Predisposed by: Ix irritation, voice misuse, smoking, alcohol, dusty occupations

Clinical picture:

- **Symptoms:**

1- Hoarseness of voice is the main symptom.

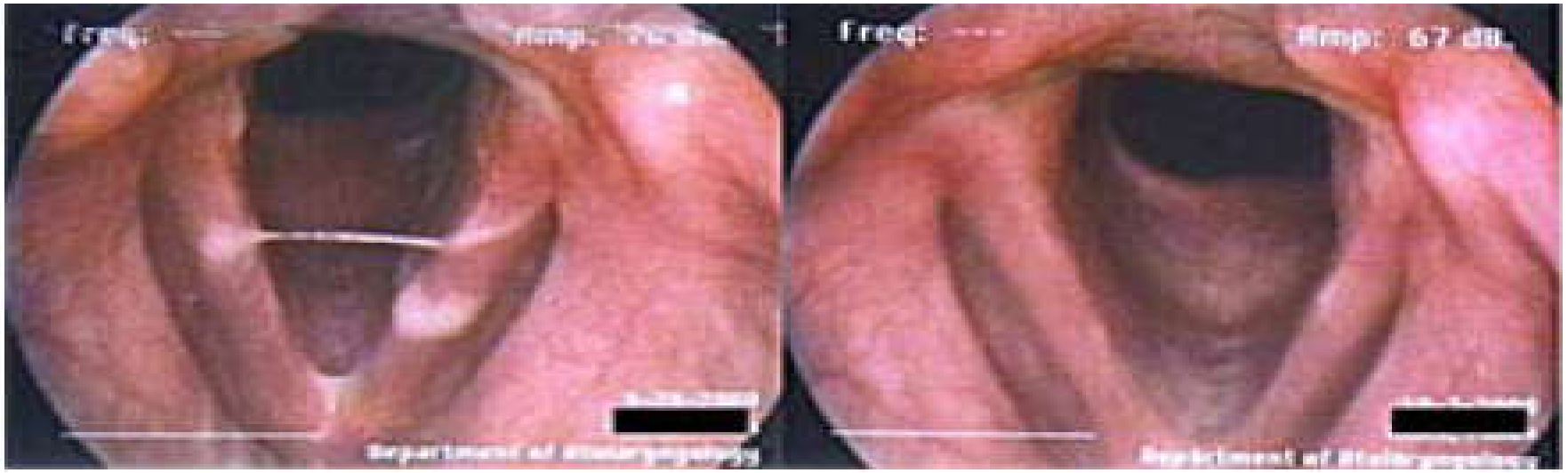
2- Dry cough followed by infection producing viscid secretions: sputum

3- Feeling of discomfort in the throat especially on talking.

- **Signs: Indirect laryngoscopy**
  - Congestion of laryngeal mucosa
  - Cords: congested, edematous, mobile
  - Mucoid secretions

Treatment

- General:
  - Voice rest
  - Avoid laryngeal irritation
  - Fluid intake
  - Mucolytics, expectorant
  - Antibiotics: if 2ry infection
- Local steam inhalation



The second picture was taken four days after the first, and demonstrates the resolution of the infection

Diseases Associated with Croup Symptoms

- Croup syndrome refers to the inspiratory stridor that is caused by inflammatory laryngeal or subglottic stenosis. It is usually associated with respiratory distress, cough, and hoarseness.
- **A croup syndrome** may be caused by various diseases that have different prog-nostic implications. True croup is the term applied to specific laryngitis in the setting of diphtheria.
- **Pseudocroup** is a collective term for viral, bacterial, and spastic forms of subglottic laryngitis.
- These entities should be strictly distinguished from acute (usually bacterial) epiglottitis, although the latter is associated with **croup-like symptoms**
- .

- The most common diseases that may be associated with croup symptoms.
  - Acute subglottic laryngitis
  - Acute epiglottis
  - Bacterial trachitis

Acute laryngitis in children

- **Etiology :**
  - Usually part of URTI: common cold, Flu
  - Organism: rhinovirus followed by 2ry bacterial infection
- **Clinical picture:**
- Symptoms:
  - The onset is preceded by a simple sore throat , with slight fever and irritating cough.
  - A (false croup) may develop suddenly with dysnpea , cyanosis and stridor.

- Serious condition, because:

1- Stridor is the main symptom because:

- Larynx is small and its lumen is narrow, so obstruction easily occurs.

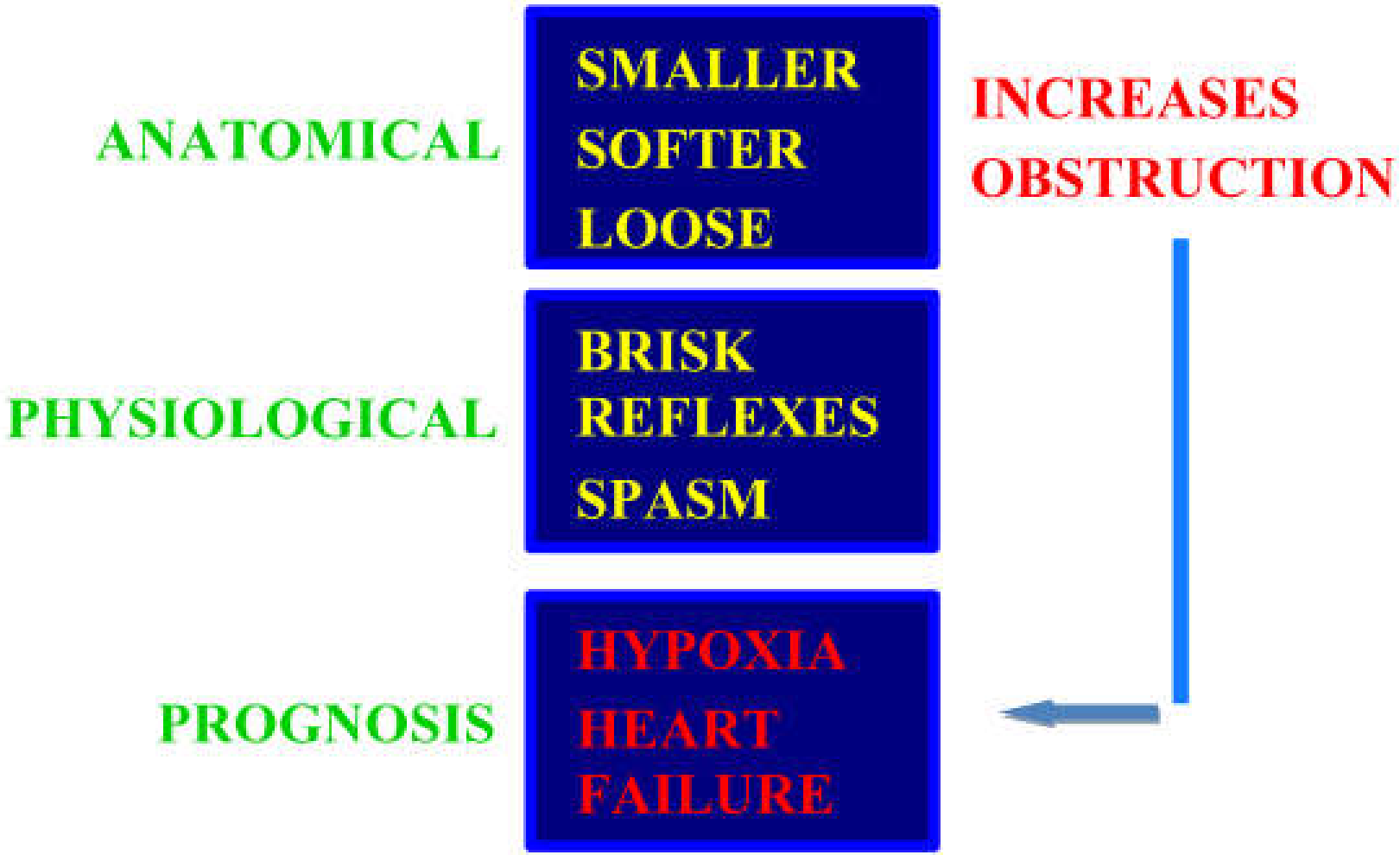
- Laryngeal submucosa is loose, so oedema easily occurs.

-Laryngeal cartilages are soft, so collapse easily occurs.

-Laryngeal reflexes are immature, so spasm easily occurs

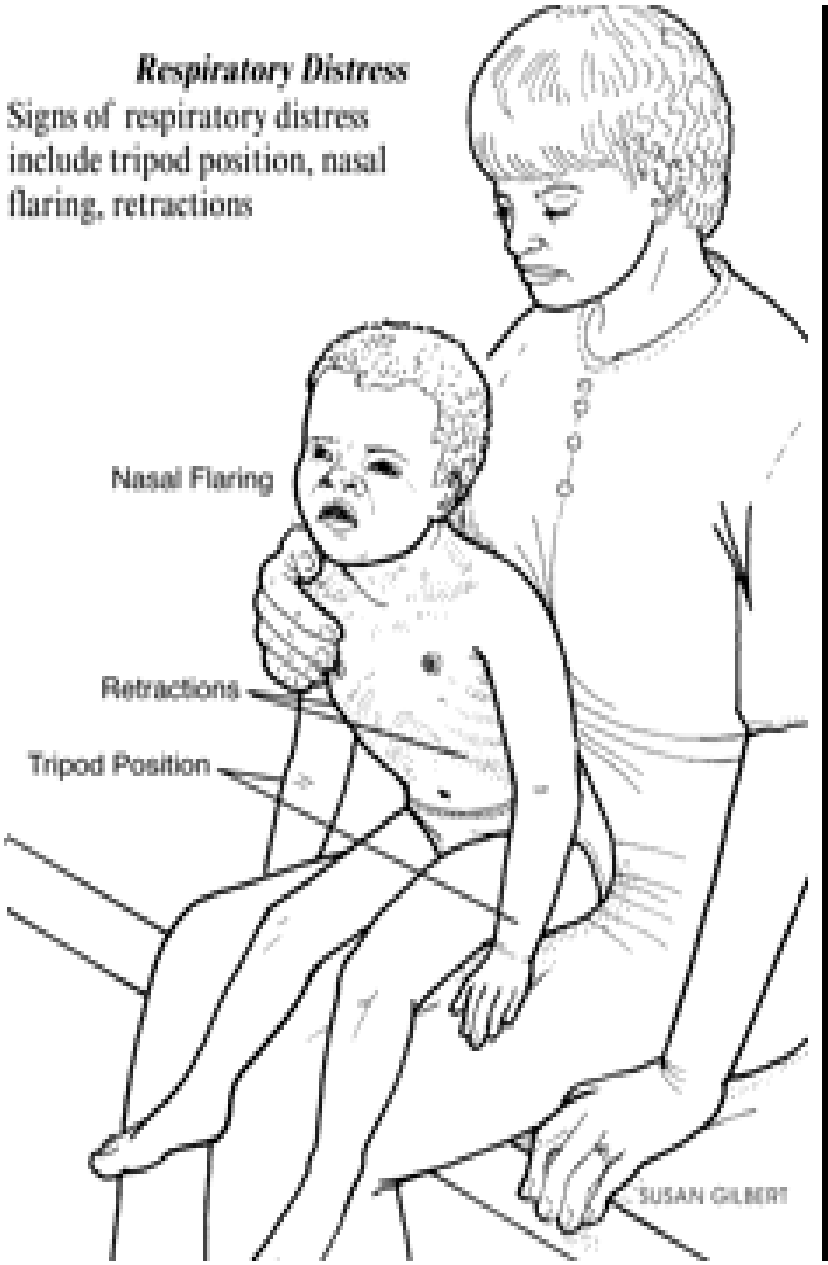
-The child less able to expel secretions by coughing

2- Dry Croupy cough: metallic tone of cough/ subglottic edema , may be accompanied with laryngeal spasm.


ANATOMICAL
SMALLER
SOFTER
LOOSE
INCREASES
OBSTRUCTION
PHYSIOLOGICAL
BRISK
REFLEXES
SPASM
PROGNOSIS
HYPOXIA
HEART
FAILURE

- **Signs (difficult examination): Mackintosh laryngoscopy / Flexible laryngoscopy**
  - Congestion of laryngeal mucosa
  - Subglottic edema: narrowing of larynx
  - Mucoid secretions

- Inspiratory stridor
- **Retraction** : indrewing of the supra- and infra-clavicular fossa and intercostal spaces during inspiration.
- **Tachypnea**
- **Tachycardia**
- **Neck Veins**
- **Fatigue**
- **Cyanosis**
- Cardiac insufficiency may develop suddenly though it is less common than in diphtheria



- **Treatment:**
- It should be treated seriously.
- Hospitalization and close observation (Pulse, RR, stridor) are mandatory. if worse: patent airway

1- General treatment:

-Antibiotics.

-Corticosteroids.

-Cough suppressants.

- Mucolytics.

-Rest in bed in the sitting or semisitting position.

-Room humidification by an atomizer or steam.

-**IV** fluids are sometimes necessary to combat dehydration.

2- Local treatment:

-Oxygen inhalation.

-Racemic epinephrine

- Endotracheal intubation or tracheotomy in cases with severe upper laryngeal obstruction.

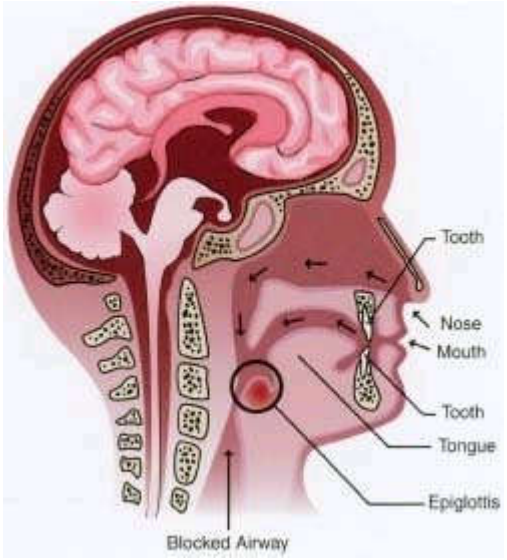
Acute epiglottitis (supra-glottitis)

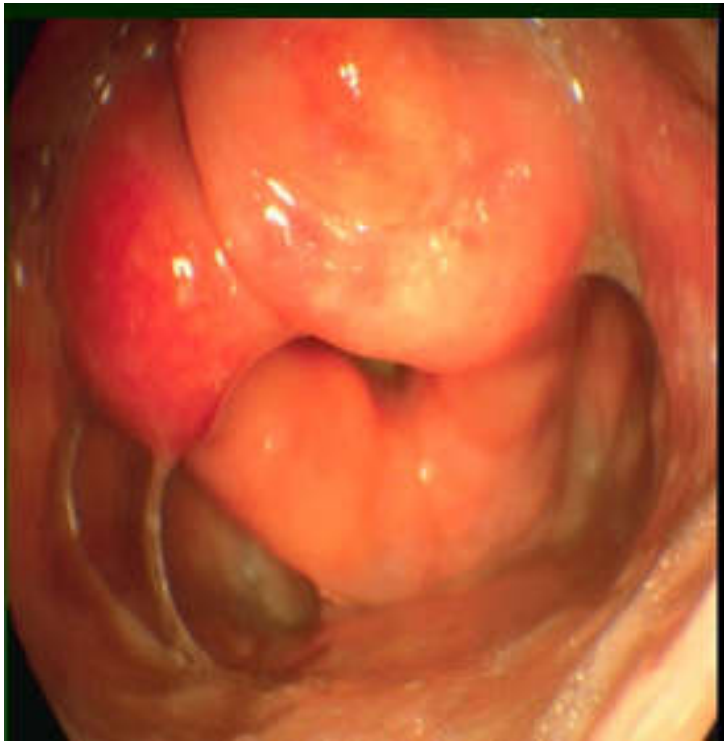
- Bacterial cellulitis of epiglottis
- It is more common in children
- Age: 2 – 6 years.
- Onset: sudden, rapid presentation over 2-6 hrs
- ↑↑ winter and spring
- The inflammatory changes affect mainly the loosely attached mucosa of epiglottis.
- Localized odema may obstruct airway especially in children.
- **H. influenza** type B. is usually causal organism .

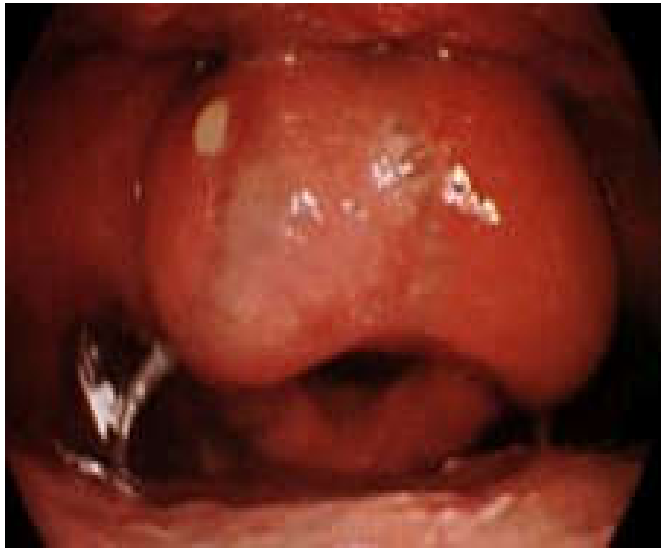
❑Clinical features

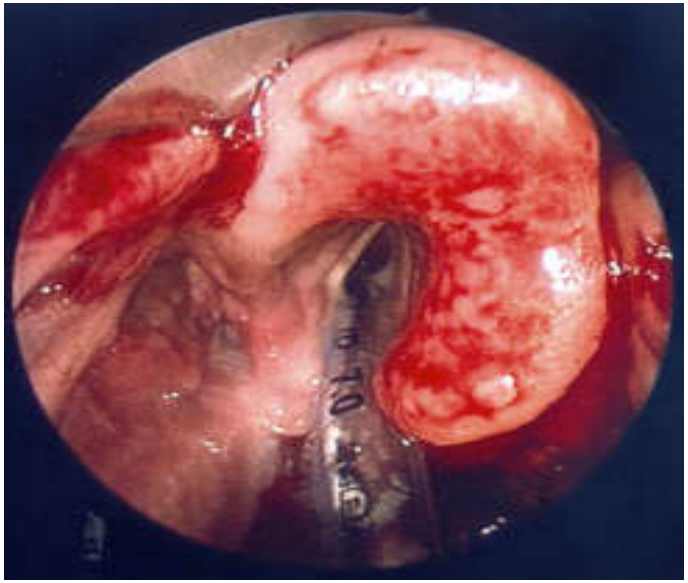
❑Symptoms

- ➢Rapidly progressive fever, headache, anorexia and malaise.
- ➢Dyspnea is progressive alarming especially in children.
- ➢Inspiratory stridor, rapidly progressive, and potentially fatal.
- ➢Pain on swallowing with drooling and hot potato muffled voice.
- ➢Sitting upright
- ➢Ill-appearing









•Signs

- Examination by tongue depressor may induce laryngeal spasm, which may be fatal ⟹ Sunshine sign
  - Indirect or flexible laryngoscopy show marked oedema and a grossly swollen and erythematous ("cherry red") of the epiglottis, aryepiglottic folds and the whole supraglottie area.
- Radiology: Lateral view X-ray neck

  marked thickened epiglottis "thumb nail sign".
- Enlarged cervical lymph nodes


a


Enlarged
Epiglottis

• Treatment

It is an emergency condition as it is life threatening

- Constant supervision in the hospital when stridor is present.
- In the operating room immediately to establish the diagnosis and secure an airway
- Intravenous antibiotics in high doses .
- Systemic steroids is commonly used .
- Tracheostomy or endotracheal intubation may become urgent especially in children .
- Extubate - usually within 48 hours

Acute laryngo-tracheo-brochitis (**acute subglottic laryngitis)**

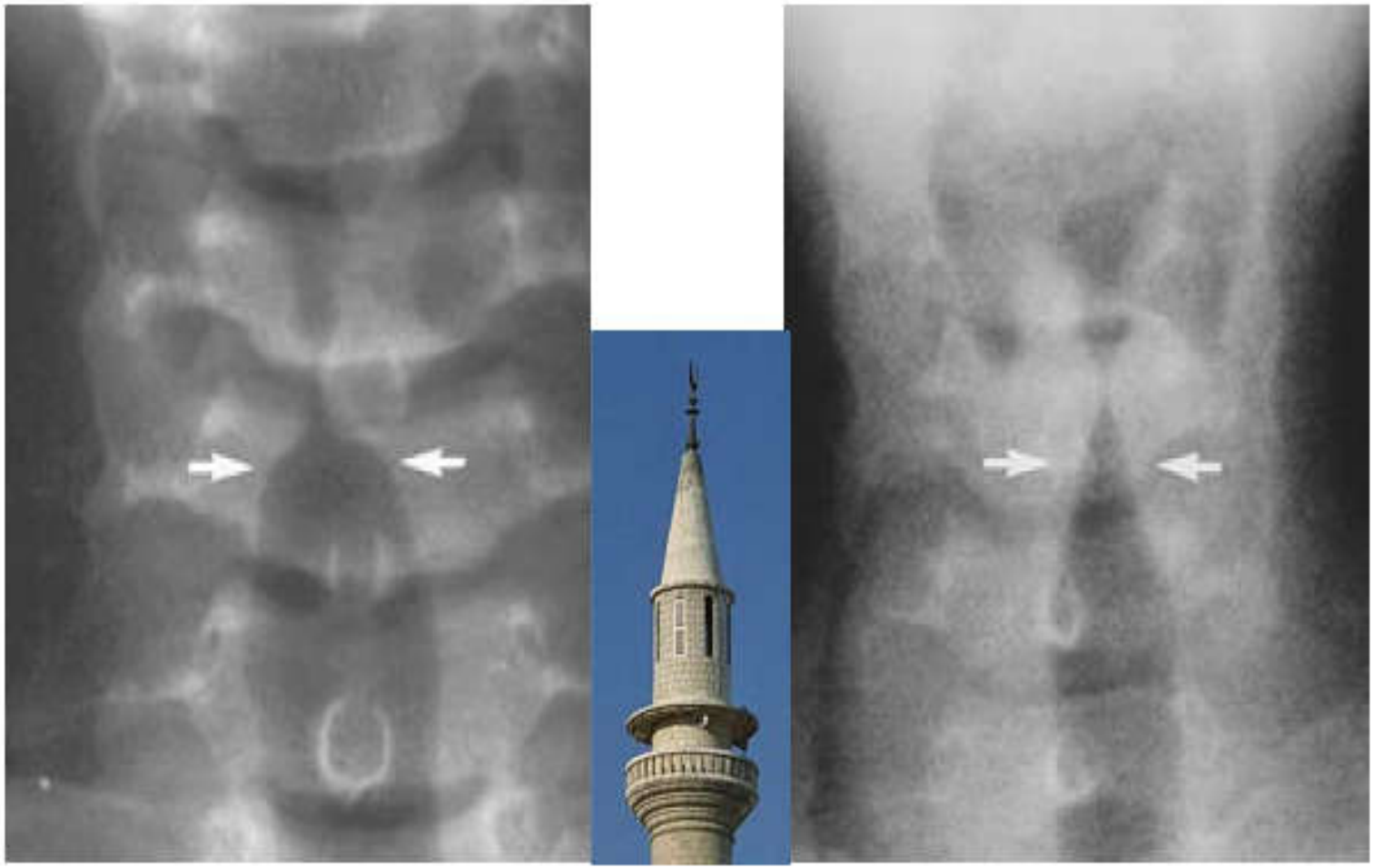
- Croup - Scottish for barking cough
- Affect infants and young children ,especially below 2 years of age (6 months to 3 years old)
- More common in epidemics
- **Organism**

Viral: parainfluenza types 1 and 2 most common , RSV, measles

• Clinical features

- Rhinitis onset: URTI
- As acute laryngitis in children but more severe.
- Pyrexia may be high, headache, anorexia and malaise.
- Hard, dry, croupy cough and hoarsness (husky voice) after a cold or influenza.
- Dyspnea and cyanosis may be marked.
- Expectoration of very thick tenacious sputum and crustating : important and cause of obstruction
- Slow Progressive stridor (biphasic), and respiratory distress.
- Atelectasia may occur due to occlusion of a bronchus.

- **Diagnosis:**
- Laryngoscopy for those with respiratory distress
- AP neck - “steeple sign”
- Supraglottis normal
- **Complication of Croup**
  - Airway obstruction
  - Extend into the lower airway
  - Dehydration.
  - Subglottic stenosis
  - Pneumothorax and pneumomediastinum



•TTT

- Should be in hospital.
- Rest and reassurance is important.
- Systemic antibiotics and hydrocortisone must be started immediately.
- Mucolytics.
- Humidification of inspired air.
- Oxygen may have to be given preferably in a tent.
- Racemic epinephrine
- Observation: Pulse, RR, stridor, if worse:patent airway
- Fluids must be given to avoid dehydration.

- Tracheostomy or endotracheal intubation to bypass obstruction and aspirate thick secretions.
- Removal of secretions may be effected by:
  - Bronchoscopy with removal by suction and forcepces .
  - Tracheostomy followed by intermittent suction.

NB:

- If patient is severely distressed or cyanotic, a patent airway should be first established: by endotracheal tube or tracheostomy

Croup Vs Epiglottitis

Characteristics of Laryngotracheitis and Epiglottitis

Feature	*Laryngotracheitis*	*Epiglottitis*
Age	<3 years	>3 years
Onset	Gradual (days)	Acute (hours)
Cough	Barky	Normal
Posture	Supine	Sitting
Drooling	No	Yes
Radiograph	Steeple sign, narrowed subglottis	Thumb sign, enlarged epiglottis,dilated hypopharynx
Cause	Viral	Bacterial
Treatment	Supportive (croup tent)	Airway management (intubation or tracheotomy), antibiotics

Table 17.5 Differential diagnosis of the most common infectious diseases associated with croup symptoms in infants and small children

Criteria	*Epiglottitis*	*Subglottic laryngitis (pseudocroup)*	*Bacterial (laryngo)tracheitis*
Causative organism	*Haemophilus influenzae* b	Viruses	Viruses with bacterial superinfection
Age	2–8 years	6 months–3 years	Infants, small children
Onset	Sudden	Gradual	Gradual
Stridor	Inspiratory	Inspiratory and expiratory	Inspiratory and expiratory
Cough	–	Barking, dry	Productive
Voice	Muffled, soft, strained	Harsh, hoarse to aphonic	
Swallowing	Difficult, painful	Unaffected	Usually difficult, painful
Dysphagia	+, drooling	–	–
Fever	High	Usually subfebrile	Moderate
Leukocytosis	++	–	+

Specific Acute Laryngitis

Diphtheritic laryngitis

- It is very rare nowadays because of the mandatory DPT vaccination.
- Children 2-5 years
- Mainly pharynx
- Local infection + systemic toxins with affinity to cardiac and nervous tissues

Clinical picture:

•Symptoms:

- Gradual onset of sore throat

-Manifestations of diphtheritic toxaemia (low grade fever, malaise, disproportionate tachycardia).

-Stridor, due to laryngeal obstruction by the diphtheritic membrane.

- Hoarseness of voice and cough.

- Signs:
  - Fever: pulse
  - Bull neck: cervical LN
  - Membrane on the tonsils
  - The laryngeal mucosa is covered with a grayish yellow pseudomembrane.

Treatment:

- Hospitalization in fever hospital , bed rest to avoid HF , isolation, oxygen therapy , antitoxic serum and penicillin.
- Tracheotomy, if needed

Laryngeal Obstruction in Children

AFEBRILE

HISTORY

LARYNGOSCOPE

FB TX

EDEMA NAD CONG PALSY PAPIL Trs

Ca

X-RAY

TRACH

CONSERVATIVE

TRACH/TUBE

BRONCHOSCOPY

FEBRILE

HISTORY

40
Progressive
Sore throat
Sitting

X-RAY

Epiglotitis

LARYNGOSCOPE

Subglottic Edema

Laryngitis

Subglottic Edema
Secretions

LTB

Membrane

Diphtheria

Post Phx Wall

Retrophg Abcess

CONSERVATIVE
AB/Cortisone
TRACH/TUBE

TRACH
Antibiotics
Antitoxin

I/D
AB

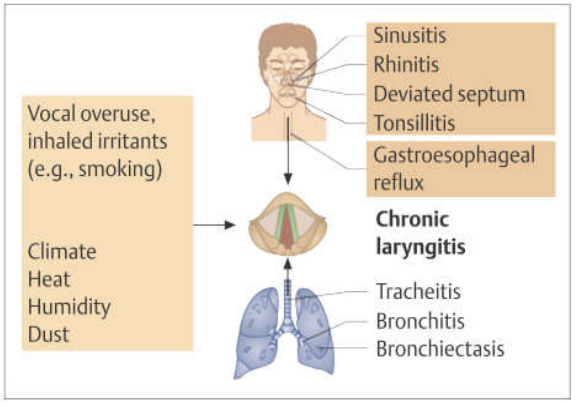
Management of Laryngeal Obstruction

- If the child is severely distressed or cyanotic, a patent airway should be first established: by endotracheal tube or tracheostomy
- Hospitalization if severe
- Oxygen therapy
- Humidification
- Antibiotics: penicillin
- Steroids: dexamethazone IV
- Racemic epinephrine
- Observation: Pulse, RR, stridor, if worse: patent airway

Chronic Non Specific laryngitis

- **Etiology**
- Repeated acute attacks
- Persistence of predisposing factors:

Fig. Causes of chronic laryngitis



Chronic laryngitis has a multifactorial etiology and is often exacerbated by intercurrent viral and bacterial infections.

- **Symptoms**
- Dysphonia
- Sore throat, dry throat, frequent clearing cough
- **Signs**
- Hyperemic bilateral thickening of VF; may show keratosis, polyp, edema

Management

- Control predisposing factors
- Voice rest
- Voice therapy
- Steam inhalation
- Antibiotics?
- Surgery: MLS:
  - Stripping of the mucosa of the vocal cords
  - Excision of the localized lesions : Cold instruments/laser

Chronic laryngitis

- Long term laryngitis
- Misuse and overuse
- Exposure to irritants
  - Smoke
  - Dust
  - Acid reflux

Chronic Diffuse Hypertophic Laryngitis

Etiology:

- Repeated attacks of acute laryngitis.
- Repeated attacks of upper respiratory infections as sinusitis and pharyngitis.
- Prolonged exposure to laryngeal irritants as tobacco and dust.
- Gastro-esophageal reflux.
- Voice abuse.

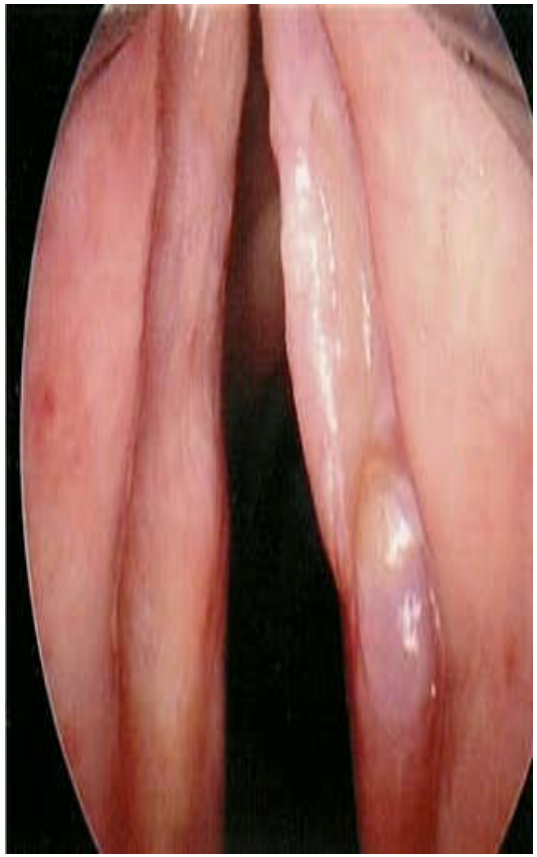
Clinical picture:

- **Symptoms:**
  - Hoarseness of voice.
  - Dry irritating cough and sore throat.
- **Signs:**
  - Bilateral symmetrical thickening of the vocal folds. They may be whitish, reddish or pale and oedematous.

Treatment:

- Avoid and /or treat the predisposing factors, e. g. stoppage of smoking, anti-reflux measures ….etc.
- Speech therapy.
- Micro-laryngeal stripping of the mucosa of vocal cords, is rarely needed.


IAP 00 mmHg
TEMP 00 degC
gasF 03.0 l/min



Chronic Localized Hypertrophic Laryngitis

Vocal (Singer's) nodules

- **Etiology:**
  - Prolonged abuse of voice.
  - Occurs commonly in untrained voice users as singers and teachers.
- **Pathology:**
  - Localized epithelial hyperplasia and/or sub-epithelial organized haematoma of the vocal fold.

Clinical picture:

- **Symptoms:**

  Hoarseness of voice.

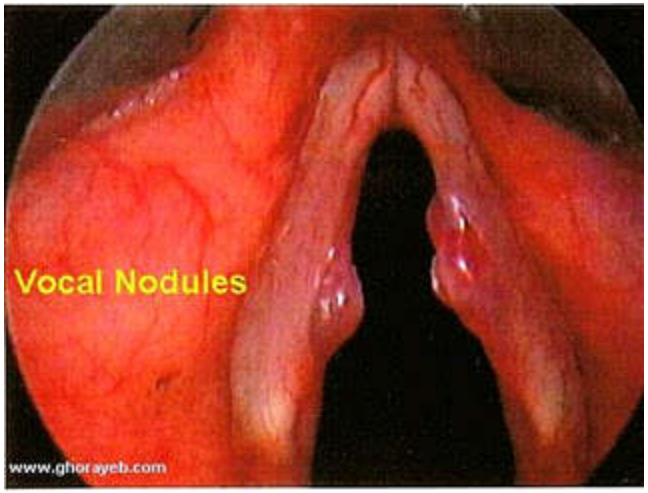
- **Signs:**

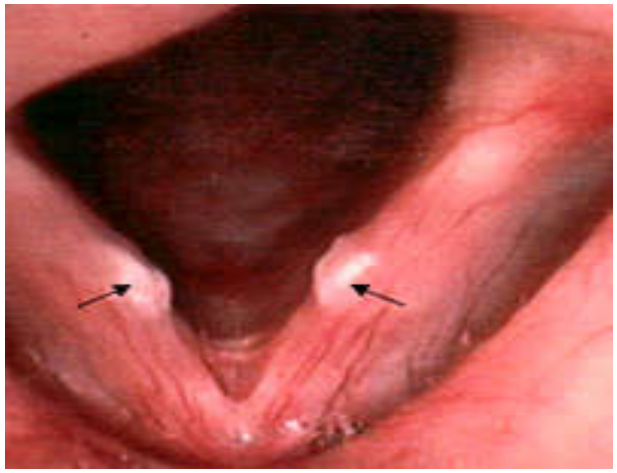
  -Localization: bilateral **at the junction of the anterior and middle thirds of the vocal folds** because it is the site of maximum contact of the vocal folds during phonation.

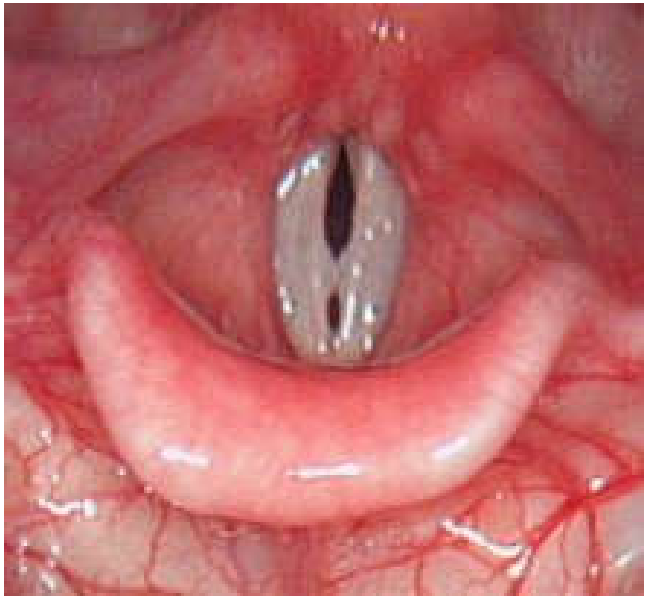
  - Morphology: small sessile smooth nodules.

Treatment:

- Speech therapy may cause regression and help to avoid recurrence.
- Micro-laryngeal excision by surgical instruments may be needed.


Vocal Nodules
www.ghorayeb.com





Vocal cord polyps

Etiology:

Usually complicates an **acute violent voice trauma** e.g. shouting.

Pathology:

Localized sub-epithelial edema (edematous polyp), vascular engorgement (vascular polyp) or fibrosis (fibrotic polyp) of the vocal fold.

Clinical picture:

- **Symptoms:**

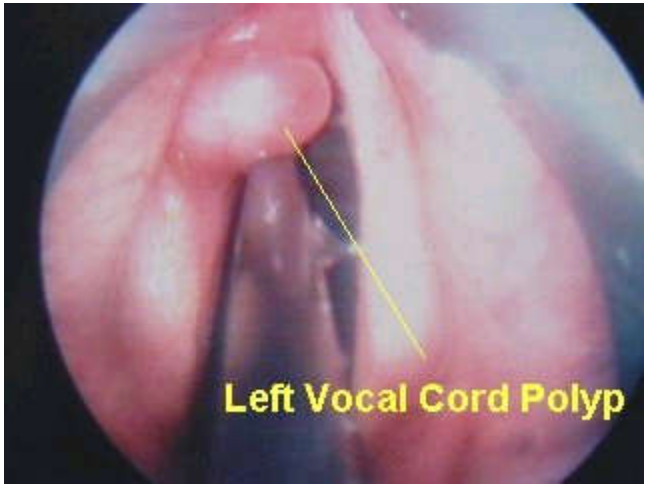
Hoarseness of voice

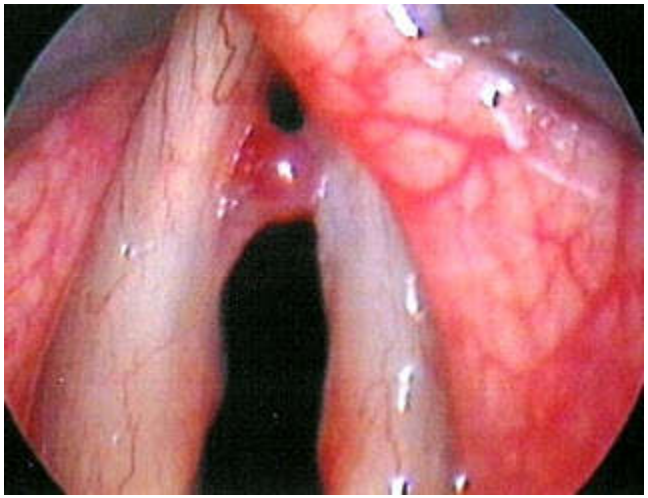
Signs:

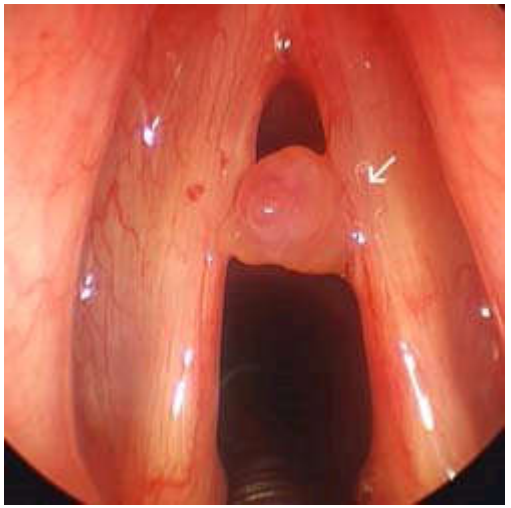
- Localization: unilateral, from anterior commissure and anterior part of the vocal fold.
- Morphology: single, variable-sized, sessile or pedunculated, smooth swelling.

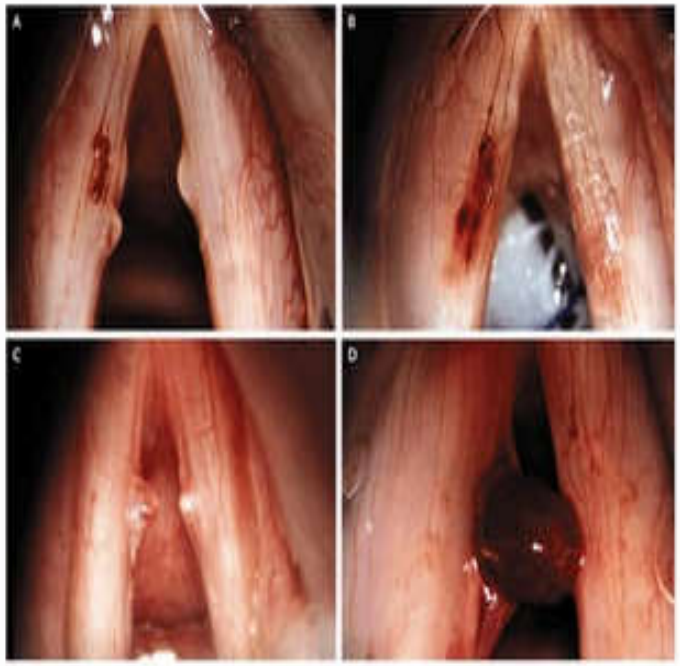
Treatment:

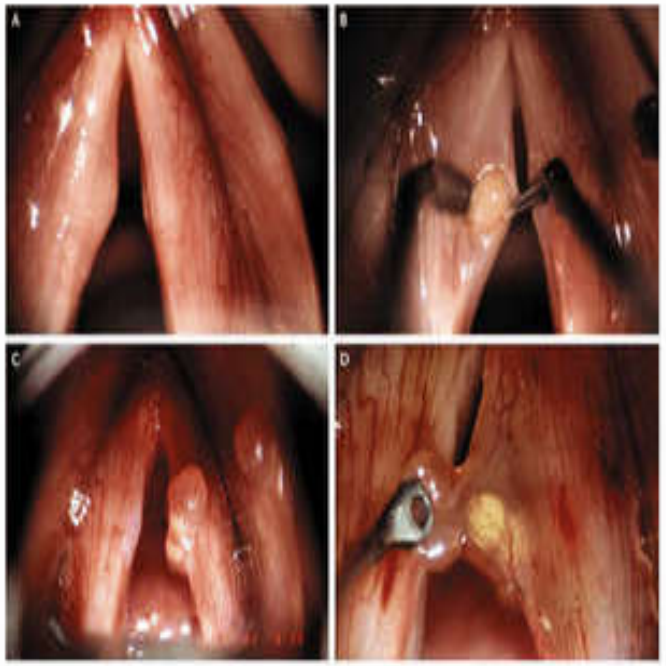
- Micro-laryngeal excision by surgical instruments.
- Speech therapy, to avoid recurrence.


Left Vocal Cord Polyp






A
B
C
D


A
B
C
D

Leukoplakia

Definition:

- Circumscribed white areas of MM.

Etiology:

- Unknown , may be chronic irritation by excessive smoking, alcohol or gastric reflux.

Pathology:

- Localized epithelial hyperplasia and hyperkeratosis of the vocal fold.
- BM remains intact (DD. from carcinoma in situ).

Clinical picture:

- Symptoms:

  Hoarseness of voice.

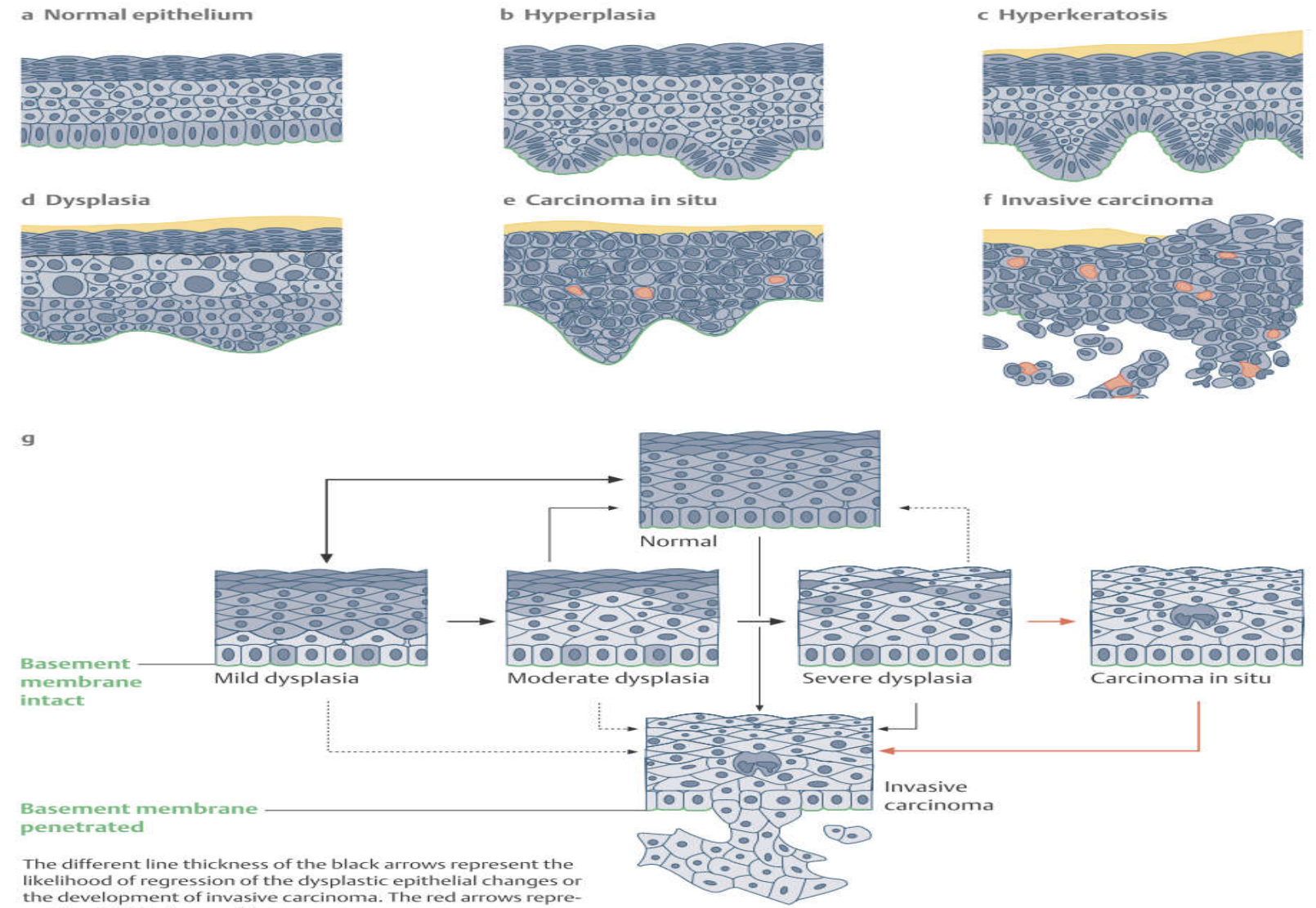
- Signs:

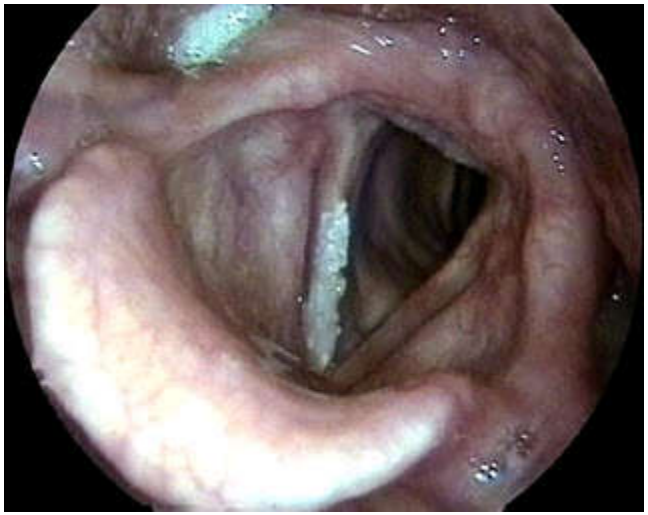
  - Localzation: unilateral middle or posterior third of VF
  - Morphology: irregular white raised patch or patches on VF

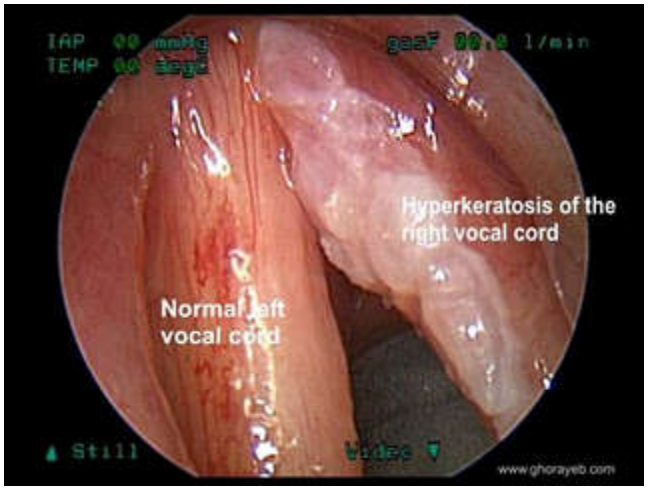
Treatment:

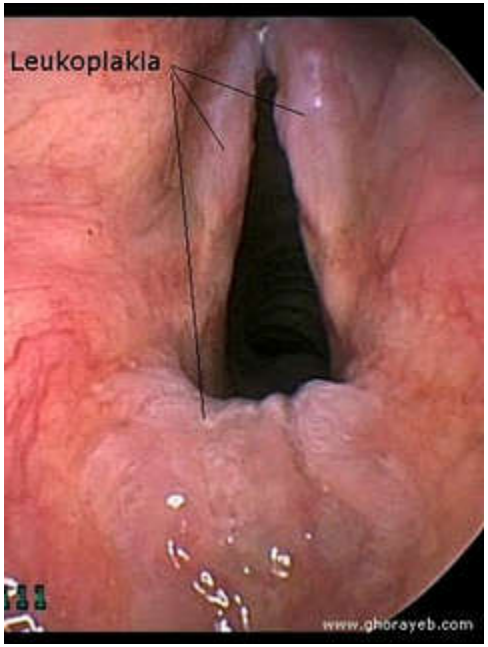
- Avoid predisposing factors.
- Micro-layrgeal Removal by surgical instruments.
- Histopathological examination, to exclude malignant changes.
- Regular observation, as it is pre-cancerous lesion.

- Histological changes in leukoplaquia:
  - Hyperkeratosis ; thickening of subepithelial cell layer
  - Parakeratosis : increase proportion of nucleated cells
  - Acanthosis : accentuation of basal (malpaghian) cell layer with elongatidinal rete pegs into submucosa (BM is intact)
  - Keratosis: accumulation of keratin
  - Dysplasia , atypia:


a Normal epithelium
b Hyperplasia
c Hyperkeratosis
d Dysplasia
e Carcinoma in situ
f Invasive carcinoma
g
Normal
Basement membrane intact
Mild dysplasia
Moderate dysplasia
Severe dysplasia
Carcinoma in situ
Invasive carcinoma
Basement membrane penetrated
The different line thickness of the black arrows represent the likelihood of regression of the dysplastic epithelial changes or the development of invasive carcinoma. The red arrows represent inevitable, irreversible processes.




Hyperkeratosis of the right vocal cord
Normal left vocal cord
www.ghorayeb.com


Leukoplakia
www.ghorayeb.com

Chronic Specific laryngitis

Laryngoscleroma

- It is the commonest chronic specific laryngeal granuloma in Egypt.

Etiology:

- Endemic in Egypt
- Secondary to rhinoscleroma
- Organism: Klebsiella Rhinoscleromatis

- **Symptoms:**
  - Stridor (Bi-phasic as it is subglottic) and dyspnea are the main symptoms.
  -Cough with expectoration of greenish crusts.
- **Signs:**
  -Localization: bilateral affecting **the subglottic region**.
  - Morphology: symmetrical masses or webs covered with greenish crusts. Healing may occur by dense subglottic fibrous tissue laryngeal stenosis.

- According to stage:

Atrophic stage:

- Multiple greenish crusts on glazed mucous membrane

Hypertrophic stage:

- Granulomatous tissue covered by crust

Fibrotic stage:

Subglottic thick web

Investigation:

- Biopsy by direct laryngoscopy
- CT scan of the larynx

Treatment:

1- Medical treatment:Antibiotics:

- Ciprofloxacin
- Rifampicin
- Ampicillin and Sutrim

2- Surgical treatment:

- Tracheostomy in severe stridor.

-Treatment of laryngeal stenosis by micro-laryngeal laser therapy.

Tuberculosis of the larynx

- Most commonly secondary to pulmonary tuberculosis.

Clinical picture:

- **Symptoms:**

1- Hoarseness of voice: the voice is **weak and soft**, due to tuberculous myositis of the laryngeal muscles.

2- Pain in the throat on speech and swallowing, may be referred to the ear (shallow ulcers with intact nerve endings).

3- Cough and may be hemoptysis.

4- Stridor.

5. Manifestations of T.B. toxaemia: night fever, night sweating, anorexia, loss of weight and wasting.

- **Signs:**

- **Localization:** It affects mainly the posterior part of the larynx in the inter-arytenoid region and posterior parts of the vocal folds.

- **Morphology:**

➢ Pale granulation tissue in inter-arytenoid area

  - ➢ Diffuse shallow yellowish ulcers: superficial, irregular with thin ragged undermined edges, cyanotic bluish margins, and yellow caseous floor.

➢ Pseudo-edema of epiglottis and AE fold: turban larynx

➢ Pallor of laryngeal and pharyngeal mucosa

➢ Reddish-browen , partially confluent submucus nodules found in interarytenoid region and supraglottic

  - ➢ Rarely, a tuberculoma is seen as a small tumour like mass of T.B. granulations at the base of the epiglottis.

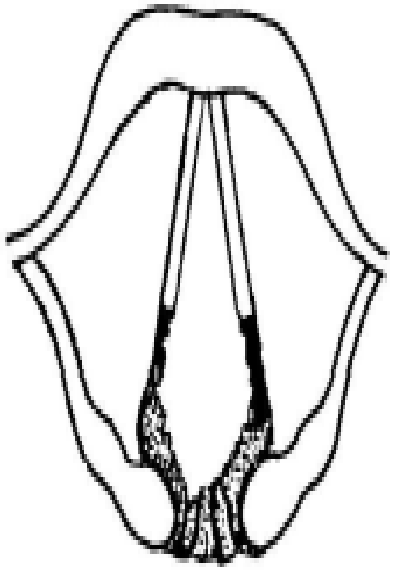
- Monochorditis: thickening and redness of one vocal cord

- Mouth-nibble appearance of vocal cord
  - Impaired cord mobility due to myositis, affection of the cricoarytenoid joint, of involvement of the recurrent laryngeal nerve by an apical pulmonary T.B.
- Late: perichondritis, necrosis, fibrosis, stenosis

Complications:

1- Perichondritis.

2- Healing by dense fibrous tissue laryngeal stenosis.



Tuberculous laryngitis.

- **Investigations:**
  1- Sputum examination for TB bacillus.
  2- X-ray chest
  3- Tuberculin test.
- **Treatment:**
  1- Medical treatment: Anti-tuberculous therapy.
  2- Surgical treatment:
    - Tracheostomy when necessary.
    - Treatment of laryngeal stenosis

Syphilis of the larynx

- Syphilitic laryngitis caused by Treponema pallidum
- It is usually a manifestation of tertiary acquired syphilis
- **Pathology** : **Anterior half of larynx is more affected**
- **Primary**: chancre on the epiglottis
- **Secondary:** mucous patches and condyloma
- **Tertiary:**
- Gumma
- Perichondritis
- Diffuse granuloma
- Punch-out ulcer
- **End stage:** fibrosis, stenosis of the larynx

- **Clinical picture:**
- **Symptoms:**
  - Hoarseness of voice (the voice is strong and harsh).
  -Stridor
  -No pain
- **Signs**:
  - Localization: It usually affects the anterior part of the larynx ,mainly the epiglottis.
  - Morphology: in the form of gumma granulation tissue, Deep punched out ulcers with wash leather floor and perichondritis. Later, Necrosis , fibrosis causes laryngeal stenosis.

- **Investigations:**
  - Non specific: as W.R. and Khan's test.
  - Specific: as TPI and TPHA.
- **Treatment:**
  1- Medical treatment: Anti-syphilitic therapy as penicillin.
  2- Surgical treatment:
    - Tracheostomy, when necessary.
    - Treatment of laryngeal stenosis.

Leprosy of the Larynx

- It affects the anterior part of the larynx including the epiglottis. It should by differentiated from syphilis.

Granulomatous Conditions That May Affect the Larynx

Disease	*Laryngeal Involvement*
Tuberculosis	Posterior one-third of larynx involved
Syphilis	Painless ulcers; positive syphilis serology
Leprosy	Supraglottic involvement
Histoplasmosis	Anterior larynx involved
Blastomycosis	Painless ulcers; microabscesses
Actinomycosis	Draining sinuses; sulfur granules
Rhinoscleroma	Catarrhal stage, Mikulicz's cells
Sarcoidosis	Supraglottic swelling, nodules, granulomas
Wegener's granulomatosis	Subglottic involvement; necrotizing vasculitis; pulmonary or renal involvement

GRANULOMAS OF THE LARYNX

	Laryngoscleroma	TB Laryngitis	$ Laryngitis
Organism	K. rhinoscleromatis	M. tuberculi	T.pallidum
Localization	Subglottic	posterior and interarytenoid	anterior and epiglottic
Morphology	granuloma, web, crusts, stenosis	pale granulations, ulcer, perichondritis	gumma, ulcer, perichondritis
Main investigation	Histopathological	Bacteriological X-ray chest	serological
Main treatment	medical by rifampicin or streptomycin	medical by anti-tuberculous drugs	medical by penicillin therapy

Acid Reflux

- Stomach acid ⟹ Larynx
- Most common cause of laryngitis
- Small amounts of reflux can cause considerable damage.
- Without GERD symptoms

- **Symptoms**
  - Hoarseness
  - Bad/bitter taste in mouth (especially in morning)
  - Chronic (on-going) cough
  - Asthma-like symptoms
  - Frequent throat clearing
  - Referred ear pain
  - Pain or sensation in throat
  - Problems while swallowing
  - Feeling of "lump" in throat (globus pharyngeus)

- **Complications**
- Stenosis
- Recurrent spasm
- C-A fixation
- Dysphagia

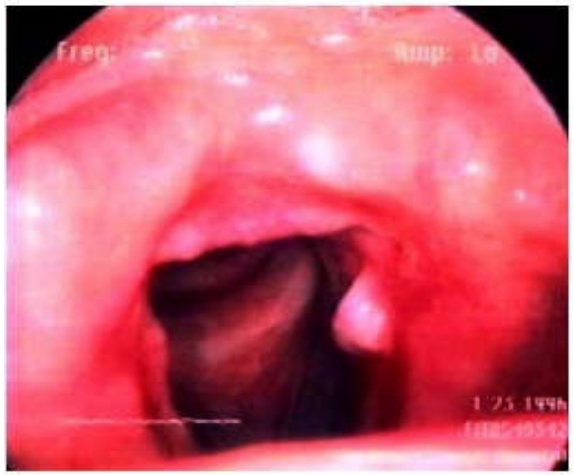
- **Examination:**

– Grade I : Normal

– Grade II : Erythema / Edema

– Grade III : Pachydermia

– Grade IV : ulcer & granuloma



- Diagnosis :
  - History
  - Examination
  - 24 H double probe PH monitoring.
  - Ba-swallow.
  - Upper GIT endoscopy

- **Treatment:**
  - Dietary and Lifestyle modifications.
  - Antacids.
  - Systemic H2-blockers.
  - Prokinetic agents.
  - Mucosal cytoprotectants.
  - Proton pump inhibitors; Omebrazole

MAPL

- Polyp
- Cyst
- Hemorrhagic cyst
- Nodules
- Reinke Edema

Perichondritis

- **There are several causes of perichondritis of the larynx.**

1. Infection (eg, tuberculosis, syphilis, septic laryngitis)
2. Trauma : mechanical , chemical or physical
3. Neoplasm with secondary infection

- **Symptoms are as follows:**
  - Insidious or sudden onset
  - Acute perichondritis may be associated with marked systemic symptoms (Fever and malaise)
  - Local pain and tenderness
  - Enlargement of laryngeal framework, swelling of the neck
  - Abscess and fistula
  - Hoarseness, cough, odynophagia with referred earache, dysphagia, dyspnea, respiratory distress.

- Signs :
  - Broadening of larynx
  - Tenderness
  - Indirect laryngeal examination : congested , odematus laryngeal mucosa
- Complication:
  - Necrosis of cartilage and stenosis
- Treatment :
  - Antibiotics +analgesics
  - Tracheostomy : if severe stridor
  - Incision and drainage and removal of necrotic cartilage
  - Laryngectomy in extensive case